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Sloat et al.

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(54) **CONSTRUCT WITH STIFFENING FEATURES**

(71) Applicant: **Graphic Packaging International, Inc.**, Atlanta, GA (US)

(72) Inventors: **Jeffrey T. Sloat**, Broomfield, CO (US); **Weston R. Wilson**, Arvada, CO (US); **Kelly R. Fitzwater**, Lakewood, CO (US)

(73) Assignee: **Graphic Packaging International, Inc.**, Atlanta, GA (US)

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B65D 1/42	(2006.01)
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B65D 5/44	(2006.01)
B65D 1/34	(2006.01)
B65D 5/20	(2006.01)

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CPC ***B65D 1/44*** (2013.01); ***B65D 1/34*** (2013.01); ***B65D 1/36*** (2013.01); ***B65D 1/40*** (2013.01); ***B65D 1/42*** (2013.01); ***B65D 5/2019*** (2013.01); ***B65D 5/441*** (2013.01); ***B65D 5/443*** (2013.01)

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CPC ... B65D 1/34; B65D 1/36; B65D 1/42; B65D 1/44; B65D 1/40; B65D 5/441; B65D 5/443; B65D 5/2019

IPC B65D 1/34,1/36, 1/42, 1/44, 1/40, B65D 5/441, 5/443, 5/2019

See application file for complete search history.

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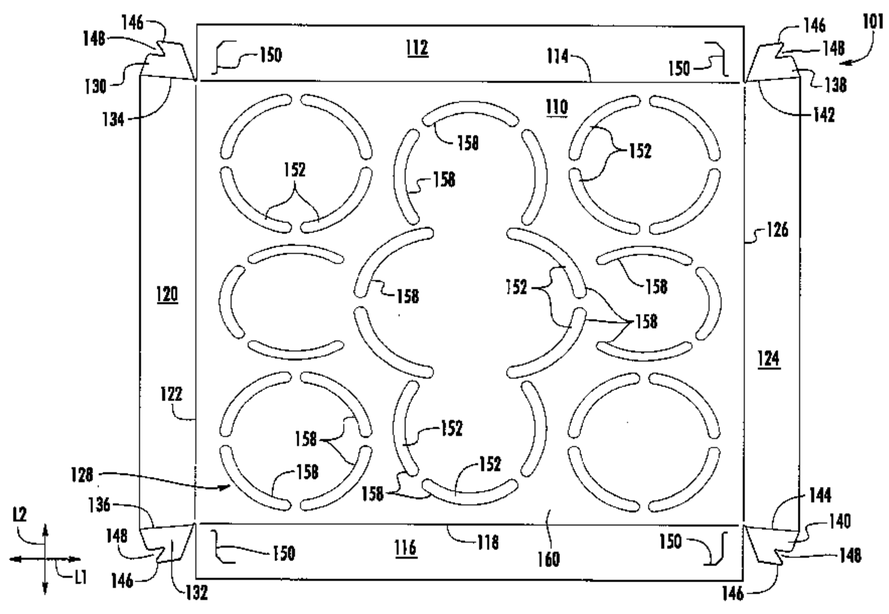
Primary Examiner — Eret McNichols

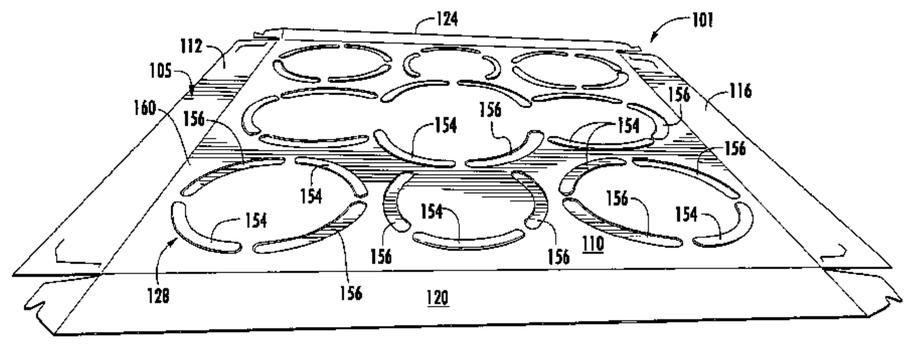
(74) *Attorney, Agent, or Firm* — Womble Carlyle Sandridge & Rice, LLP

(57) **ABSTRACT**

In general, one aspect of the disclosure is generally directed to a construct for supporting at least one article. The construct can comprise at least a panel and a plurality of stiffening features. The plurality of stiffening features can comprise a pattern of bosses formed in the panel. The pattern of bosses can be configured for at least partially reducing buckling of the panel.

43 Claims, 10 Drawing Sheets





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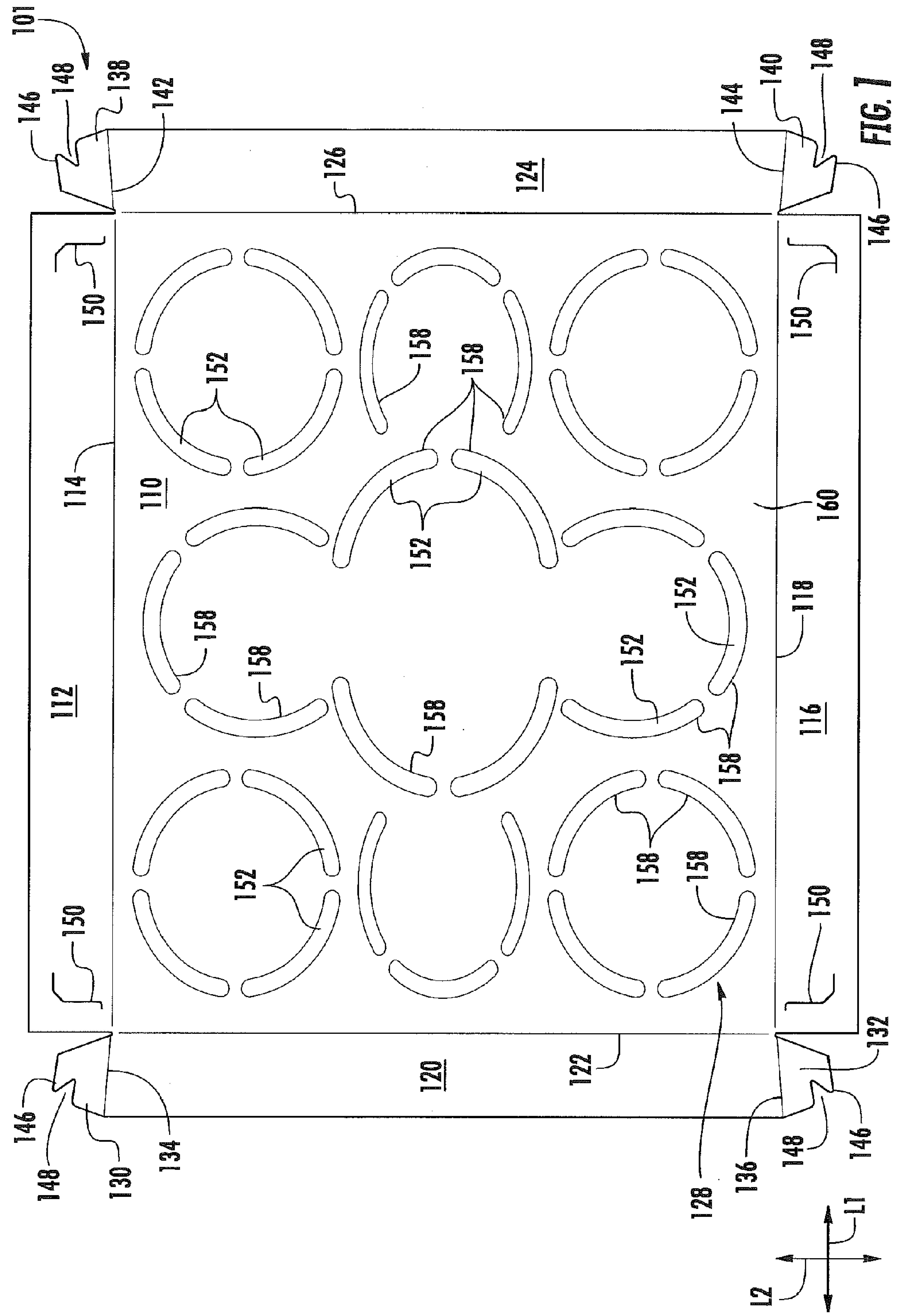
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FIG. 1

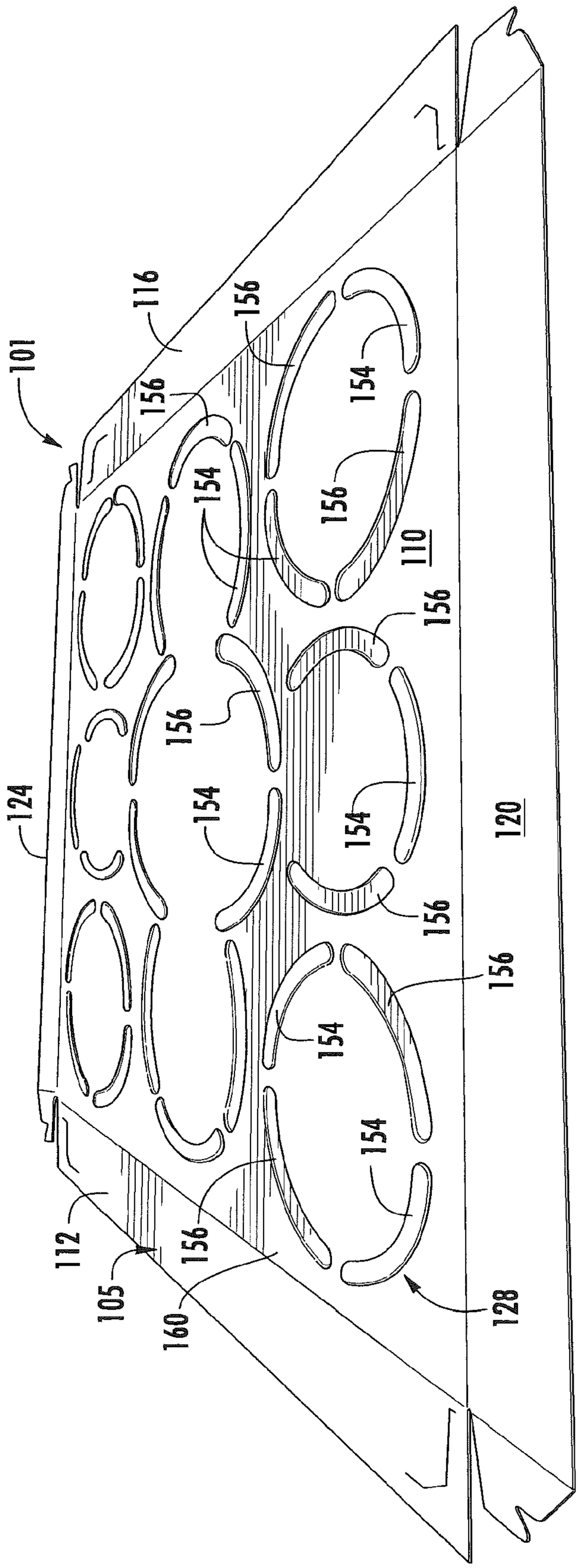


FIG. 2

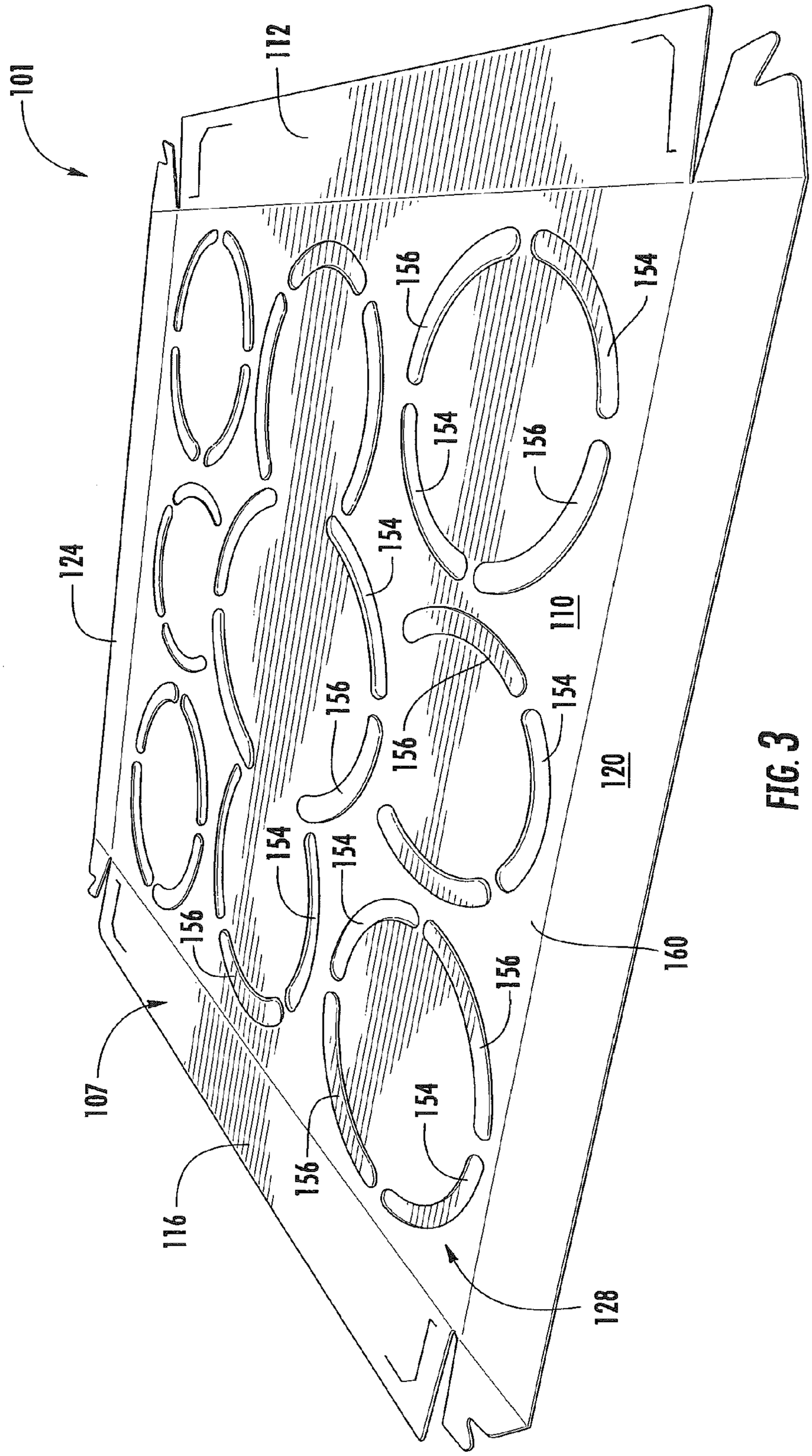
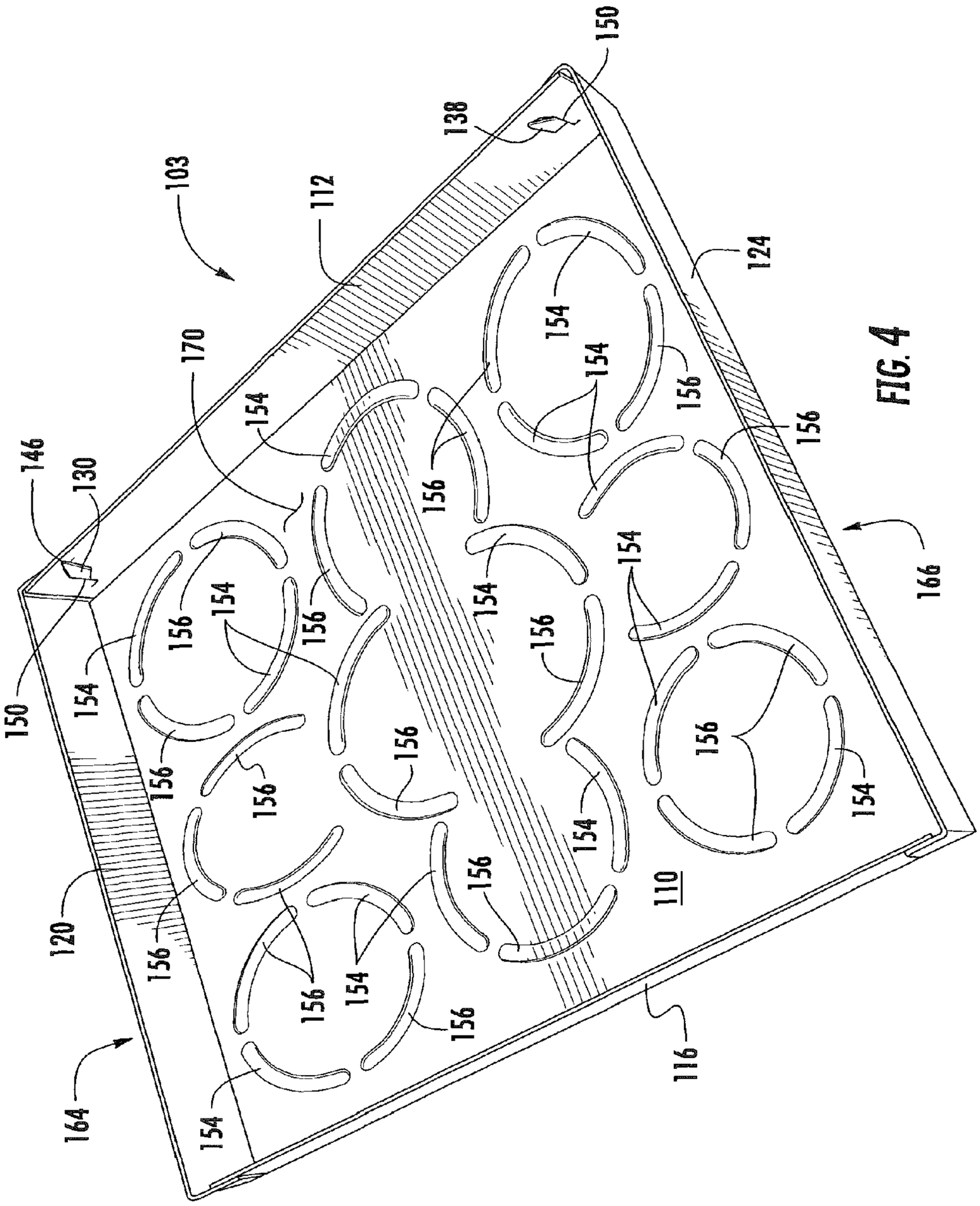


FIG. 3



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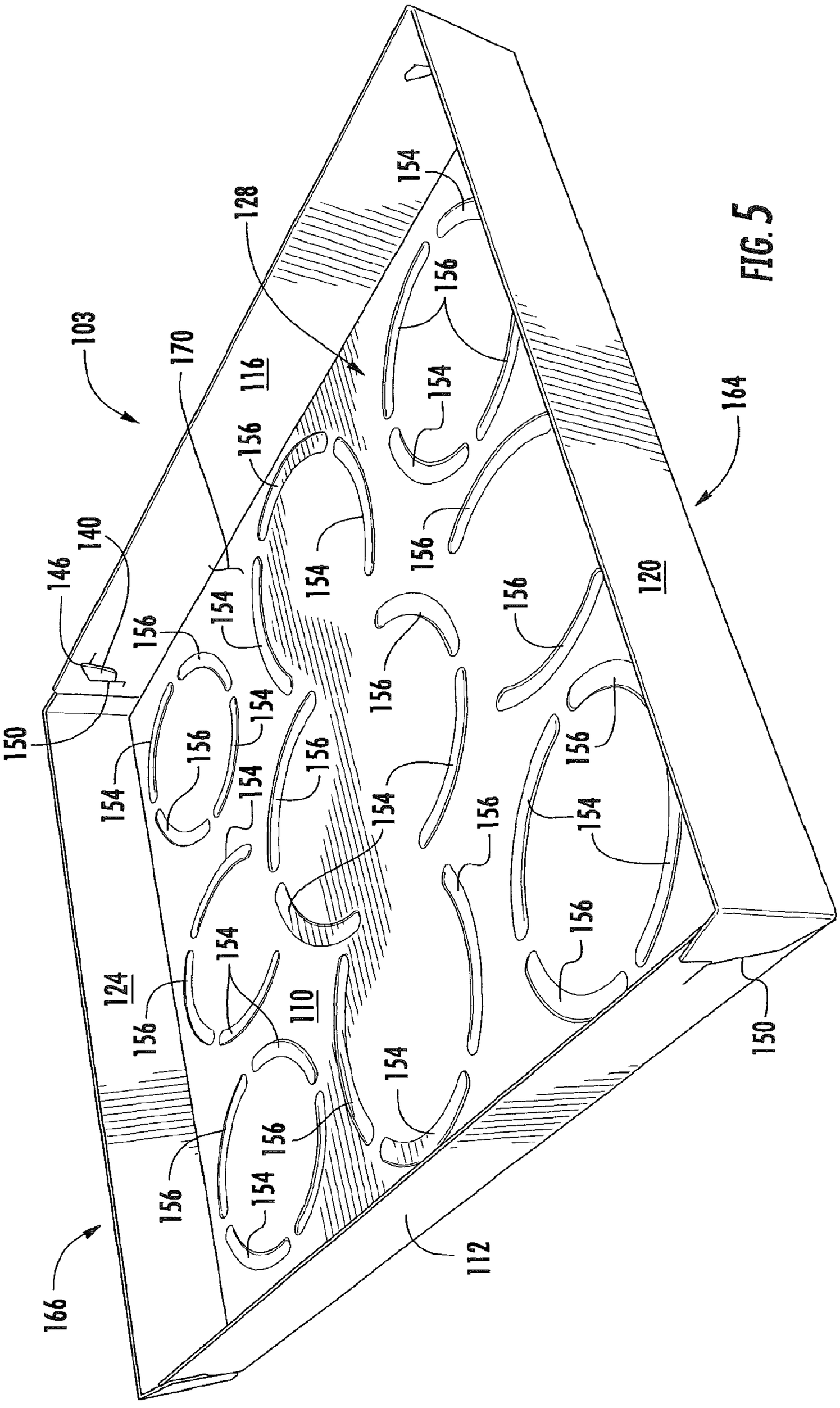

FIG. 5

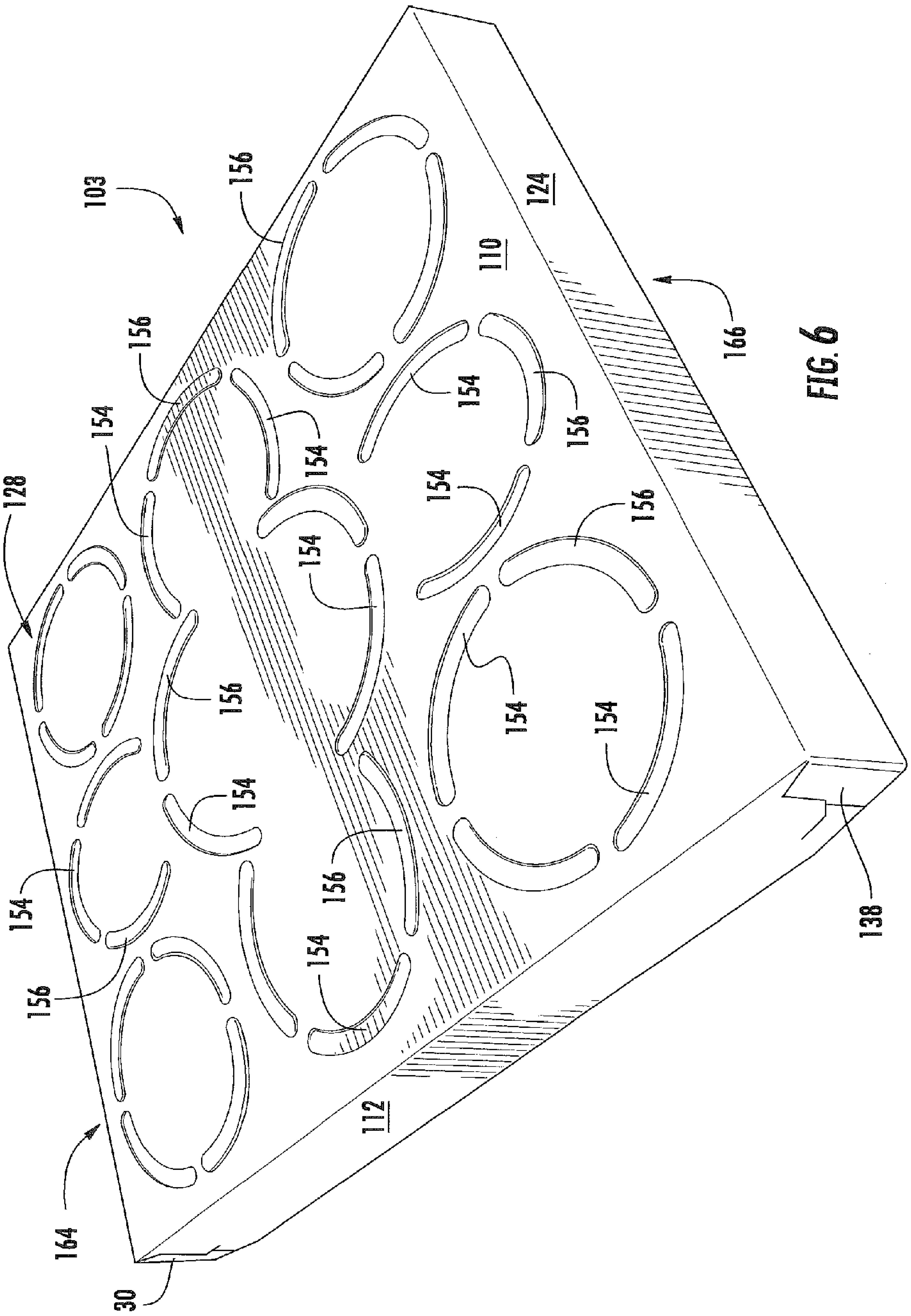

FIG. 6

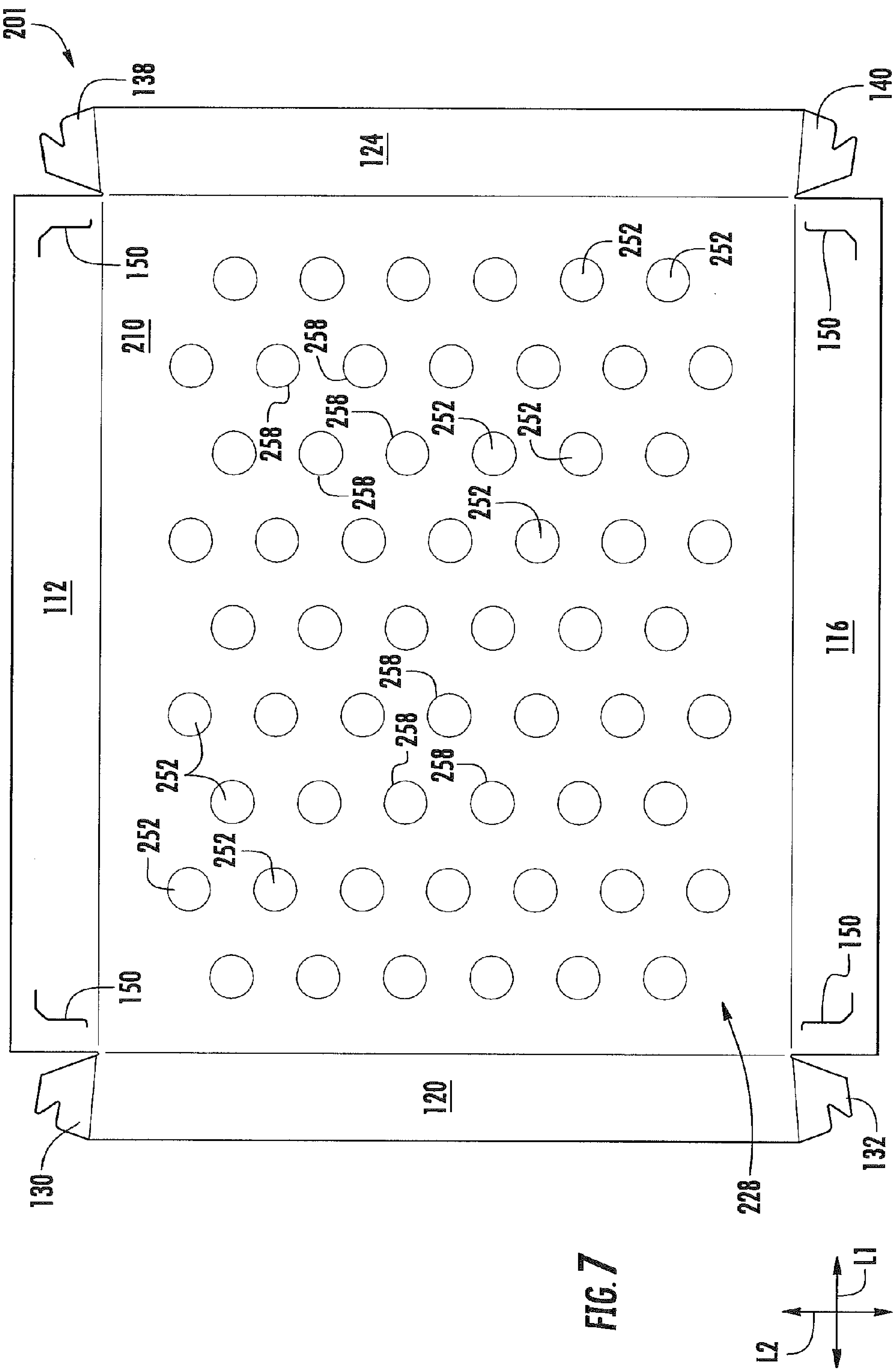
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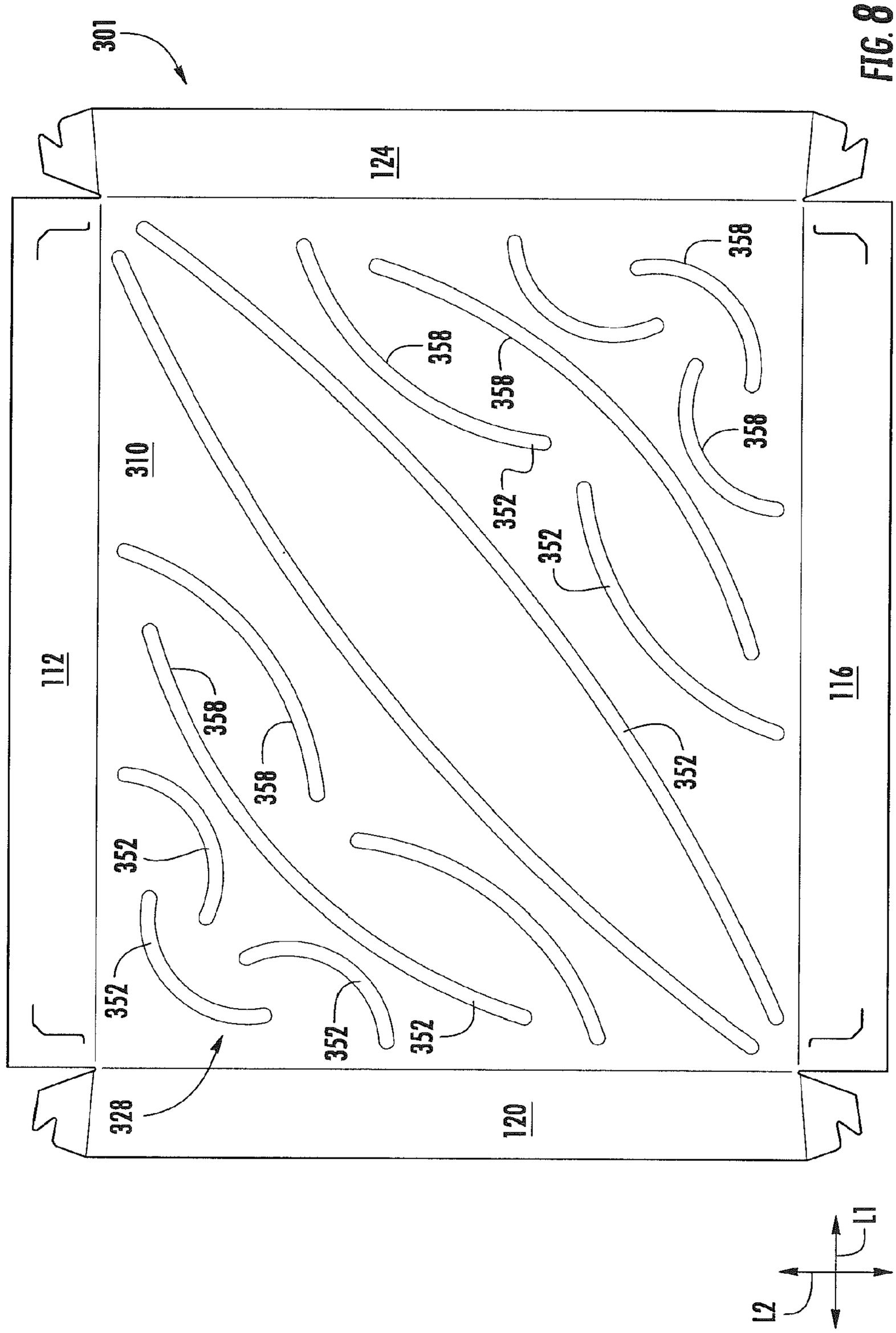
FIG. 7

FIG. 8



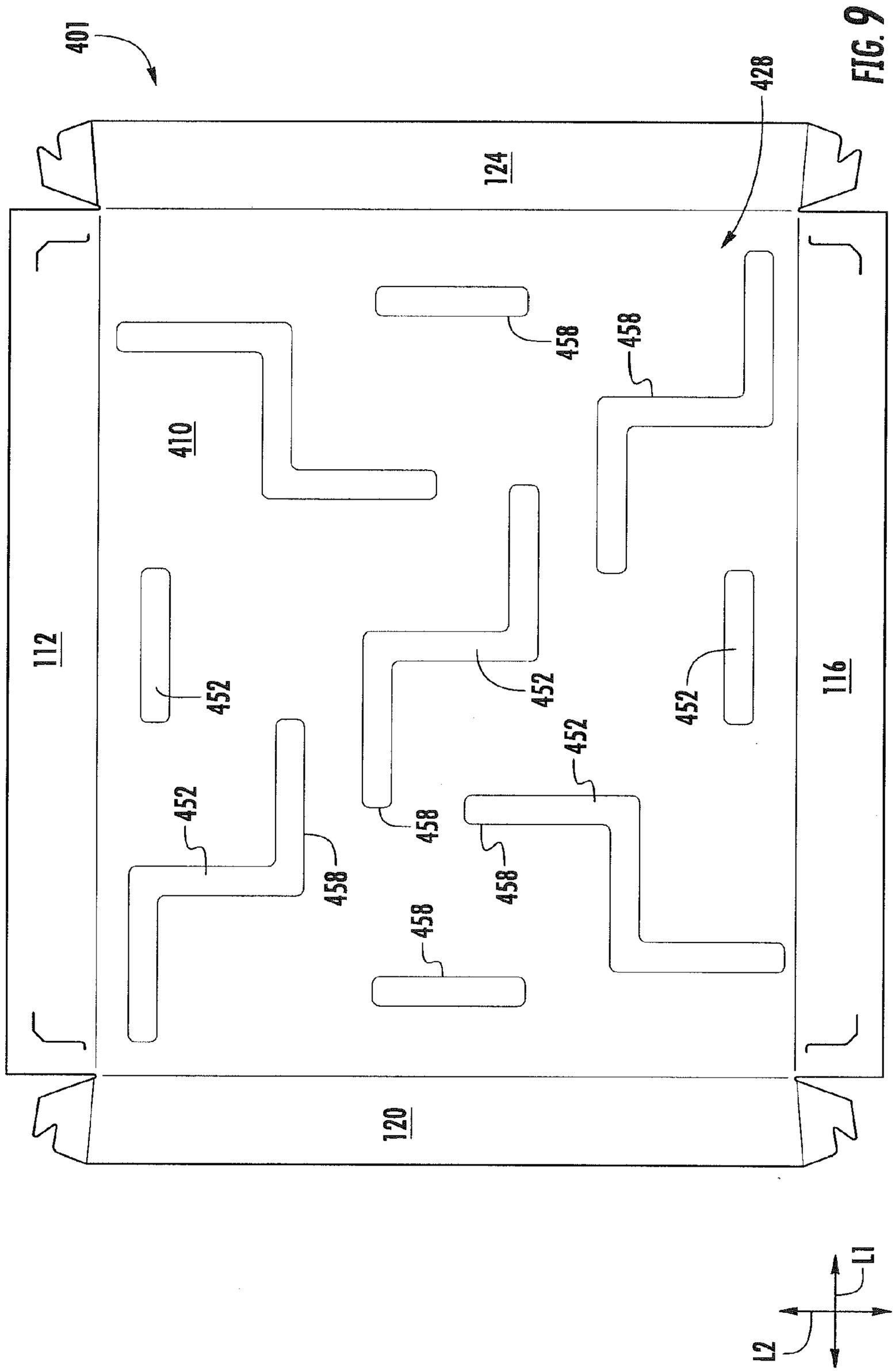

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FIG. 9

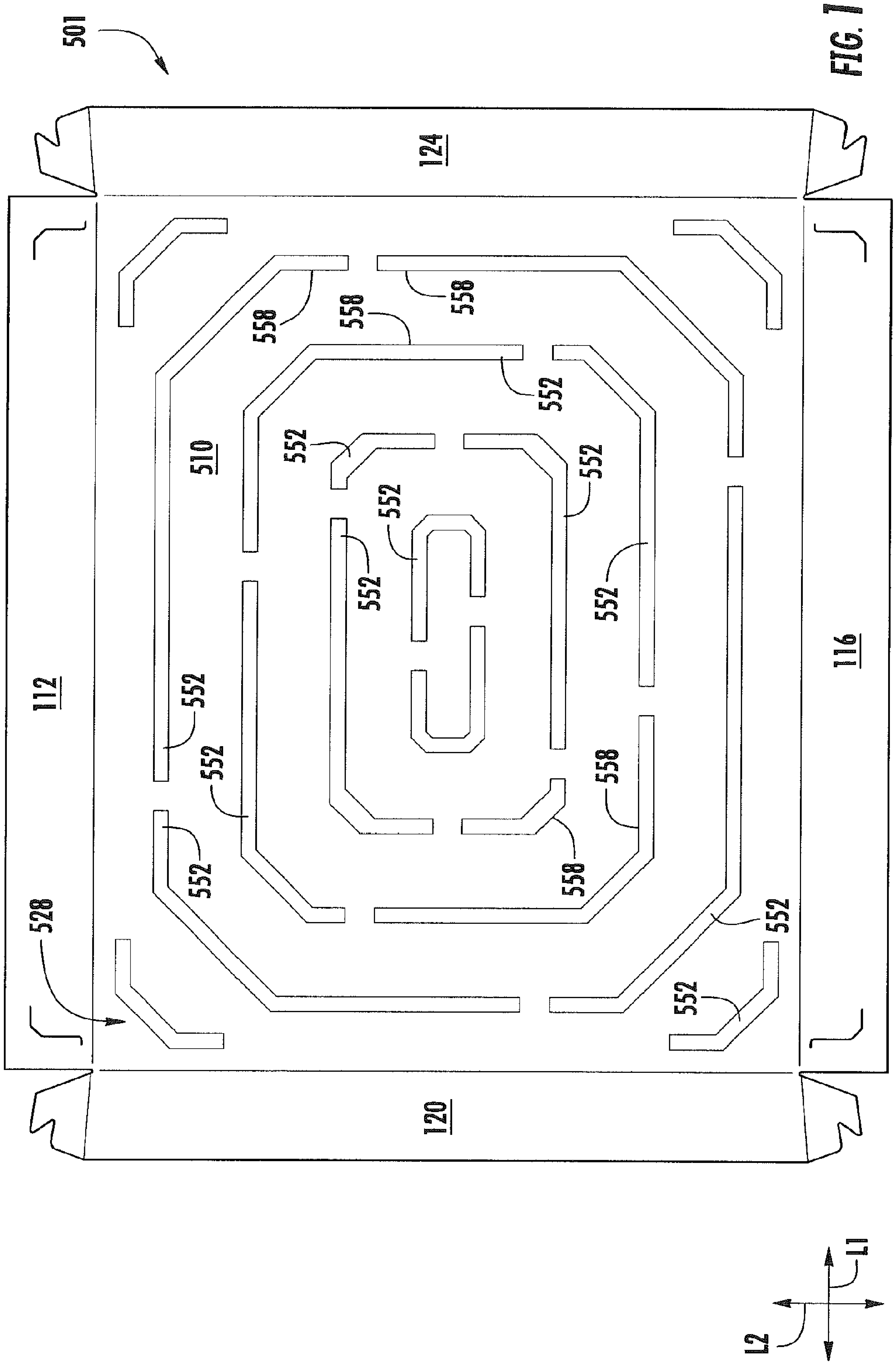
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FIG. 10

CONSTRUCT WITH STIFFENING FEATURES

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Patent Application No. 61/963,866, filed Dec. 16, 2013.

INCORPORATION BY REFERENCE

The disclosure of U.S. Provisional Patent Application No. 61/963,866, which was filed on Dec. 16, 2013, is hereby incorporated by reference for all purposes as if presented herein in its entirety.

BACKGROUND OF THE DISCLOSURE

The present disclosure generally relates to cartons, trays, and/or other constructs for holding food products and/or other types of articles. More specifically, the present disclosure relates to materials and constructs that may include stiffening features.

SUMMARY OF THE DISCLOSURE

In general, one aspect of the disclosure is generally directed to a construct for supporting at least one article. The construct can comprise at least a panel and a plurality of stiffening features. The plurality of stiffening features can comprise a pattern of bosses formed in the panel. The pattern of bosses can be configured for at least partially reducing buckling of the panel.

In another aspect, the disclosure is generally directed to a method of forming a construct.

The method can comprise obtaining a web of material comprising at least a panel and forming a plurality of stiffening features in the panel. The forming the plurality of stiffening features can comprise forming a pattern of bosses in the panel for at least partially reducing buckling of the panel.

Those skilled in the art will appreciate the above stated advantages and other advantages and benefits of various additional embodiments reading the following detailed description of the embodiments with reference to the below-listed drawing figures.

BRIEF DESCRIPTION OF THE DRAWINGS

According to common practice, the various features of the drawings discussed below are not necessarily drawn to scale. Dimensions of various features and elements in the drawings may be expanded or reduced to more clearly illustrate the embodiments of the disclosure.

FIG. **1** is a plan view of a blank used to form an exemplary tray according to a first embodiment of the present disclosure.

FIGS. **2** and **3** are perspective views of the blank of FIG. **1**.

FIGS. **4-6** are perspective views of the erected tray according to the first embodiment of the present disclosure.

FIG. **7** is a plan view of a blank used to form an exemplary tray according to a second embodiment of the disclosure.

FIG. **8** is a plan view of a blank used to form an exemplary tray according to a second embodiment of the disclosure.

FIG. **9** is a plan view of a blank used to form an exemplary tray according to a second embodiment of the disclosure.

FIG. **10** is a plan view of a blank used to form an exemplary tray according to a second embodiment of the disclosure.

Corresponding parts are designated by corresponding reference numbers throughout the drawings.

DETAILED DESCRIPTION OF THE EXEMPLARY EMBODIMENTS

The package of the present disclosure can be useful in containing one or more products (e.g., a food product) or other articles such as any suitable type of product that can be stored, transported, cooled, frozen, heated, and/or cooked (e.g., in a microwave oven). Some suitable products could comprise a frozen, refrigerated, or other pizza, sandwich, vegetables, popcorn, cuts of meat, or any other suitable food product or other article. Further, the package of the present disclosure can be used for heating, cooking, browning, crisping, etc. the food product by use of a heating or cooking device such as a microwave oven. It is understood that food products other than the food products listed herein may be contained in the package. Further, products contained in this package may be generally rectangular, triangular, round, square, irregular, or any other shape. In this specification, the terms "inner," "interior," "outer," "exterior," "lower," "bottom," "upper," and "top" indicate orientations determined in relation to fully erected and upright packages.

FIG. **1** is a plan view of a blank, generally indicated at **101**, used to form a package or tray (broadly "construct") **103** (FIGS. **4-6**) of an exemplary embodiment of the disclosure. In one embodiment, the blank **101** can have an interior surface **105** (FIG. **2**) and an exterior surface **107** (FIG. **3**). The tray **103** is used to hold and/or support a food product (not shown), such as a French bread pizza, sandwich, turnover, burrito, meats, or any other food product, during cooking, refrigerating, freezing, etc. of the food product. In one embodiment, at least a portion of the tray **103** may have an element (not shown) for use in cooking, heating, browning, and/or shielding (e.g., a microwave energy interactive element, such as, but not limited to, a susceptor) mounted thereto. Alternatively, a microwave energy interactive element can be omitted from the tray **103**. In an alternative embodiment, the tray **103** can hold and/or support a non-food item or article.

The blank **101** has a longitudinal axis L**1** and a lateral axis L**2**. The blank **101** includes a central panel **110** foldably connected to a first side panel **112** at a first longitudinal fold line **114**. A second side panel **116** is foldably connected to the central panel **110** along a second longitudinal fold line **118**. A first end panel **120** is foldably connected to the central panel **110** along a first lateral fold line **122** at one longitudinal end of the central panel **110**, and a second end panel **124** is foldably connected to the central panel **110** along a second lateral fold line **126** at another longitudinal end of the central panel **110**. As shown in FIG. **1**, the central panel **110** can include a plurality stiffening features **128**. Alternatively, the stiffening features **128** can be omitted or otherwise configured, arranged, or positioned without departing from the scope of the disclosure.

In the illustrated embodiment, the blank **101** includes end flaps **130**, **132** foldably connected to the first end panel **120** along respective fold lines **134**, **136** at respective ends of the first end panel **120**. End flaps **138**, **140** are respectively foldably connected to the second end panel **124** along the respective fold lines **142**, **144** at respective ends of the second end panel **124**. Each of the end flaps **130**, **138**, **132**, **140** includes a locking feature, such as a projection **146** and

a recess **148** for engaging a respective slit **150** in a respective side panel **112**, **116**. The end flaps could be otherwise shaped, arranged, positioned, and/or configured without departing from the disclosure. For example, the locking features could be omitted from the end flaps **130**, **132**, **138**, **140**, and/or the end flaps **130**, **138**, **132**, **140** could be glued to the respective side panels **112**, **116**. In an alternative embodiment, the end flaps **130**, **138**, **132**, **140** could be foldably connected to the respective side panels **112**, **116**, and the slits **150** could be disposed in the end panels **120**, **124**. Alternatively, the end flaps **130**, **132**, **138**, **140** could be omitted from the blank **101** without departing from the disclosure.

As shown in FIG. **1**, the plurality of stiffening features **128** can include one or more patterns of bosses **152** formed in the central panel **110**. Only a representative few of the bosses **152** are identified by their reference numbers in FIG. **1**. In the illustrated embodiment, the bosses **152** can include emboss features **154** and deboss features **156** (FIGS. **2** and **3**). For example, the emboss features **154** can comprise depressions or grooves in the interior surface **105** and raised portions in the exterior surface **107** of the blank **101**, and the deboss features **156** can comprise raised portions in the interior surface **105** and depressions or grooves in the exterior surface **107**. As shown in FIGS. **1-3**, each of the bosses **152** is at least partially defined by an edge **158**, which can be a transition between the bossed areas and the neutral area **160** of the central panel **110**. For example, the neutral area **160** can be a generally planar portion of the central panel **110**, and the bosses **152** can extend from the plane of the neutral area **160** at the edges **158**. In one embodiment, the edges **158** can be generally perpendicular to the plane of the central panel **110**. Alternatively, the edges **158** could be sloped or curved transitions. In one embodiment, one or more edges **158** could be a transition between an emboss feature **154** and a deboss feature **156**. As shown in FIGS. **1-3**, the bosses **152** are curved segments in circular (and/or other elliptical shapes), semicircular, or horseshoe-shaped (e.g., semielliptical) arrangements within the overall pattern of the plurality of stiffening features **128**. The arrangements, patterns, and/or shapes of the bosses **152** are shown by way of example, and other arrangements, patterns, and/or shapes could be used. For example, in an alternative embodiment, the curved segments could be longer, shorter, enclosed shapes (e.g., circles, ovals, hourglasses, etc.), or any other suitable configuration.

As shown in FIGS. **2** and **3**, the emboss features **154** and the deboss features **156** can alternate in the pattern of bosses **152** in the central panel **110**. In alternative embodiments, the emboss features **154** and/or deboss features **156** could be otherwise configured. For example, the emboss features and/or deboss features could be grouped together, interspersed, or otherwise arranged. In another example, the bosses **152** could be all emboss features **154** or all deboss features **156**. One or more of the bosses **152**, emboss features **154**, and/or deboss features **156** could be omitted or could be otherwise shaped, arranged, positioned, and/or configured without departing from the disclosure.

In one embodiment, the blank **101** can be formed from a web of material. For example, areas of the material can be deformed upwardly with respect to the neutral area **160** to form the emboss features **154**, and areas of the material can be deformed downwardly with respect to the neutral area **160** to form the deboss features **156**. Any of the fold lines **114**, **118**, **122**, **126**, **134**, **136**, **142**, **144**, the cut lines **150**, and/or the edges of the blank **101** could be formed before or after the bosses **152** in the web of material. The blank **101**, including the bosses **152**, could be otherwise formed without departing from the disclosure. Additionally, in alternative embodiments, the blank **101** could be otherwise shaped, arranged, and/or configured.

As shown in FIGS. **4-6** and described in the following in accordance with one acceptable example, the tray **103** is formed from the blank **101** by first upwardly folding the side panels **112**, **116** along the respective longitudinal fold lines **114**, **118** and folding the end panels **120**, **124** along the respective lateral fold lines **122**, **126**. Each of the end flaps **130**, **138** can be folded along the respective lateral fold lines **134**, **142** into face-to-face contact with the exterior surface of the first side panel **112** and inserted into the respective slits **150** so that the projections **146** and recesses **148** engage the respective slits **150**. Additionally, each of the end flaps **132**, **140** can be folded along the respective lateral fold lines **136**, **144** into face-to-face contact with the exterior surface of the second side panel **116** and inserted into the respective slits **150** so that the projections **146** and recesses **148** engage the respective slits **150**. Accordingly, the first end panel **120** and the end flaps **130**, **132** form a first closed end **164** of the tray **103**. Similarly, the second end panel **124** and the end flaps **138**, **140** form a second closed end **166** of the tray **103**. Alternatively, the end flaps **130**, **138**, **132**, **140** can be folded into face-to-face contact with the interior surfaces of the respective side panels **112**, **116**. As shown in FIGS. **4** and **5**, the central panel **110**, the side panels **112**, **110**, and the closed ends **164**, **166** form the interior **170** of the tray **103**. Alternative assembling, loading, and closing steps may be used without departing from the scope of the disclosure. For example, the end flaps **130**, **138**, **132**, **140** can be glued into face-to-face contact with the respective side panels **112**, **116** in addition, or alternatively, to interlocking the end flaps to the side panels via the projections **146** and the slits **150**.

In the illustrated embodiment, the stiffening features **128** can help prevent buckling, bending, and/or other failure of the central panel **110**. For example, the bosses **152** can be arranged so that little or none of the edges **158** are aligned with the grain of the blank **101** (in one embodiment, the grain is parallel to the longitudinal direction L**1**). For example, each of the edges **158** can have a length (e.g., extending around the perimeter of the respective boss **152**), and the edge **158** can be nonparallel with the grain of the blank **101** along at least a majority of the length of the edge **158**. In another embodiment, the edge **158** is nonparallel with the grain along at least a portion of the length of the edge **158**. If the central panel **110** starts to buckle or fold, a fold or crease can start to propagate across the central panel. For example, in one embodiment, a central panel with the stiffening features omitted could form a fold (e.g., buckle) at one corner, and the fold could propagate to extend to the opposing corner, which could cause the tray to collapse. However, for the central panel **110**, a fold or crease can intersect with a boss **152** and be redirected along the edge **158** of the boss. The fold can propagate along at least a portion of the edge **158**, and the fold can stop or continue to another boss **152**, which can further redirect the fold. Accordingly, the bosses **152** can disrupt a fold or crease in the central panel **110** and can help prevent a fold or crease from extending across the central panel **110** to help prevent failure of the tray **103**. In one embodiment, the stiffening features **128** can result in a ten percent increase in strength of the central panel **110**. For example, a central panel with the stiffening features and comprising an **18** point paperboard might replace a panel without the stiffening features and comprising **20** point paperboard.

In the illustrated embodiment, the plurality of stiffening **128** features is formed in the central panel **110** of the tray **103**. In alternative embodiments, however, the stiffening features can be formed in one or more panels of any suitable construct (e.g., fully enclosed carton, wrap, basket carrier, divider panel, etc.). The blank **101** and tray **103** are included by way of example only. Additionally, as shown in FIG. **1**, the bosses **152** comprise a certain percentage of the blank **101** (e.g., the total embossed and/or debossed area of the central panel **110** could be approximately 14% of the central panel). However, more or less of the blank could comprise embossed and/or debossed features (e.g., any suitable area of the central panel **110** could be embossed and/or debossed), and/or the bosses **152** could be longer, wider, shorter, narrower, or any suitable size without departing from the disclosure.

FIG. **7** illustrates a blank **201** for forming a tray (not shown) according to a second embodiment of the disclosure. The second embodiment is generally similar to the first embodiment, except for variations noted and variations that will be apparent to one of ordinary skill in the art. Accordingly, similar or identical features of the embodiments have been given like or similar reference numbers. As shown in FIG. **7**, the blank **201** includes a central panel **210** with a plurality of alternative stiffening features **228**. In the second embodiment, the stiffening features **228** can include an array of bosses **252** in the form of circles (and/or other ellipses) or dots. As shown in FIG. **7**, the bosses **252** can be defined by circular edges **258**. The bosses **252** can be embossed and/or debossed (e.g., embossed features interspersed with deboss features, or any other suitable configuration). As shown in FIG. **7**, the bosses **252** are aligned in a number of rows, each row being offset from the adjacent row(s). In alternative embodiments, the bosses **252** could be arranged in an array with aligned columns and rows, could be offset in any or all directions, could be randomly disposed, or could be arranged in any suitable configuration. The bosses **252** could be omitted or could be otherwise shaped, arranged, positioned, and/or configured without departing from the disclosure.

FIG. **8** illustrates a blank **301** for forming a tray (not shown) according to a third embodiment of the disclosure. The third embodiment is generally similar to the first embodiment, except for variations noted and variations that will be apparent to one of ordinary skill in the art. Accordingly, similar or identical features of the embodiments have been given like or similar reference numbers. As shown in FIG. **8**, the blank **301** includes a central panel **310** with a plurality of alternative stiffening features **328**. In the third embodiment, the stiffening features **328** can include an arrangement of bosses **352** in the form of curves (e.g., elongate curves). As shown in FIG. **8**, the bosses **352** can be defined by arcuate edges **358**. The bosses **352** can be embossed and/or debossed (e.g., embossed features interspersed with deboss features, or any other suitable configuration). As shown in FIG. **8**, the bosses **352** can be arranged with alternating radii of curvature. For example, the upper left boss is curved toward the upper left, then two bosses curved toward the lower right are disposed adjacent the upper left boss. A longer boss curved toward the upper left is next, followed by two bosses curved towards the lower left, and then a boss extending from the lower left corner to the upper right corner and curved toward the upper left corner. The remaining bosses generally can be a mirror image of the upper left bosses. In alternative embodiments, the bosses **352** could be arranged in any suitable configuration. The bosses **352** could be omitted or could be otherwise shaped, arranged, positioned, and/or configured without departing from the disclosure.

FIG. **9** illustrates a blank **401** for forming a tray (not shown) according to a fourth embodiment of the disclosure. The fourth embodiment is generally similar to the first embodiment, except for variations noted and variations that will be apparent to one of ordinary skill in the art. Accordingly, similar or identical features of the embodiments have been given like or similar reference numbers. As shown in FIG. **9**, the blank **401** includes a central panel **410** with a plurality of alternative stiffening features **428**. In the fourth embodiment, the stiffening features **428** can include an arrangement of bosses **452** in the form of generally straight lines (e.g., generally straight segments) and lines with angles so that the boss has two generally longitudinal segments connected by a generally lateral segment or two generally lateral segments connected by a generally longitudinal segment. As shown in FIG. **9**, the bosses **452** can be defined by edges **458**. In alternative embodiments, the bosses **452** could be arranged in any suitable configuration. The bosses **452** can be embossed and/or debossed (e.g., embossed features interspersed with deboss features, or any other suitable configuration). The bosses **452** could be omitted or could be otherwise shaped, arranged, positioned, and/or configured without departing from the disclosure.

FIG. **10** illustrates a blank **501** for forming a tray (not shown) according to a fifth embodiment of the disclosure. The fifth embodiment is generally similar to the first embodiment, except for variations noted and variations that will be apparent to one of ordinary skill in the art. Accordingly, similar or identical features of the embodiments have been given like or similar reference numbers. As shown in FIG. **10**, the blank **501** includes a central panel **510** with a plurality of alternative stiffening features **528**. In the fifth embodiment, the stiffening features **528** can include an arrangement of bosses **552** in the form of angled lines (e.g., an oblique segment connecting an end of a longitudinal segment to an end of a lateral segment). As shown in FIG. **10**, the bosses **552** can be defined by edges **558**. The bosses **552** can be embossed and/or debossed (e.g., embossed features interspersed with deboss features, or any other suitable configuration). As shown in FIG. **10**, the bosses **552** can be arranged in concentric polygons, for example. In alternative embodiments, the bosses **552** could be arranged in any suitable configuration. The bosses **552** could be omitted or could be otherwise shaped, arranged, positioned, and/or configured without departing from the disclosure.

Any of the features of the various embodiments of the disclosure can be combined with, replaced by, or otherwise configured with other features of other embodiments of the disclosure without departing from the scope of this disclosure. Further, it is noted that the stiffening features of the various embodiments can be incorporated into a tray, carrier, carton, or any other suitable construct having any suitable style or panel configuration. The trays described above are included by way of example. For example, the stiffening features could be included in one or more panels and/or flaps of a fully enclosed carton, a basket-style carrier, a wrap-around carrier, a divider, etc. Additionally, the shapes of the stiffening features (i.e., the shapes of the edges defining the various bosses described above) can be substantially any shape. The shapes described above and included in the figures are included by way of example.

In general, the blank may be constructed from paperboard having a caliper so that it is heavier and more rigid than ordinary paper. The blank can also be constructed of other materials, such as cardboard, or any other material having

properties suitable for enabling the carton to function at least generally as described above. The blank can be coated with, for example, a clay coating. The clay coating may then be printed over with product, advertising, and other information or images. The blank may then be coated with a varnish to protect information printed on the blanks. The blank may also be coated with, for example, a moisture barrier layer, on either or both sides of the blanks. The blank can also be laminated to or coated with one or more sheet-like materials at selected panels or panel sections.

In accordance with the exemplary embodiments, a fold line can be any substantially linear, although not necessarily straight, form of weakening that facilitates folding therealong. More specifically, but not for the purpose of narrowing the scope of the present disclosure, fold lines include: a score line, such as lines formed with a blunt scoring knife, or the like, which creates a crushed or depressed portion in the material along the desired line of weakness; a cut that extends partially into a material along the desired line of weakness, and/or a series of cuts that extend partially into and/or completely through the material along the desired line of weakness; and various combinations of these features. In situations where cutting is used to create a fold line, typically the cutting will not be overly extensive in a manner that might cause a reasonable user to incorrectly consider the fold line to be a tear line.

The above embodiments may be described as having one or more panels adhered together by glue during erection of the carton embodiments. The term "glue" is intended to encompass all manner of adhesives commonly used to secure carton panels in place.

The foregoing description of the disclosure illustrates and describes various exemplary embodiments. Various additions, modifications, changes, etc., could be made to the exemplary embodiments without departing from the spirit and scope of the disclosure. It is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. Additionally, the disclosure shows and describes only selected embodiments of the disclosure, but the disclosure is capable of use in various other combinations, modifications, and environments and is capable of changes or modifications within the scope of the inventive concept as expressed herein, commensurate with the above teachings, and/or within the skill or knowledge of the relevant art. Furthermore, certain features and characteristics of each embodiment may be selectively interchanged and applied to other illustrated and non-illustrated embodiments of the disclosure.

What is claimed is:

1. A construct for supporting at least one article, the construct comprising:

at least a panel; and

a plurality of stiffening features comprising a pattern of bosses formed in the panel, the pattern of bosses being configured for at least partially reducing buckling of the panel,

the pattern of bosses comprising:

at least one emboss and at least one deboss, wherein

the at least one emboss is spaced apart from the at least one deboss by a neutral area of the panel, the neutral area of the panel comprising a first planar surface extending between the at least one emboss and the at least one deboss and extending to an outer edge of the panel,

the at least one emboss is at least partially defined by an emboss edge,

the at least one deboss is at least partially defined by a deboss edge,

an entirety of the emboss edge abutting the neutral area and extending from the first planar surface to a second planar surface in a first direction, the emboss edge comprising an outer peripheral emboss edge portion, an inner peripheral emboss edge portion, a first curved radial emboss edge end, and a second curved radial emboss edge end, the first curved radial emboss edge end and the second curved radial emboss edge end each connecting the outer peripheral emboss edge portion and the inner peripheral emboss edge portion, and

an entirety of the deboss edge abutting the neutral area and extending from the first planar surface to a third planar surface in a second direction, the deboss edge comprising an outer peripheral deboss edge portion, an inner peripheral deboss edge portion, a first curved radial deboss edge end, and a second curved radial deboss edge end, the first curved radial deboss edge end and the second curved radial deboss edge end each connecting the outer peripheral deboss edge portion and the inner peripheral deboss edge portion, the second direction being opposite the first direction, and

the first planar surface extending between the first curved radial emboss edge and the first curved radial deboss edge.

2. The construct of claim **1**, wherein at least one of the emboss edge and the deboss edge extends perpendicular to the neutral area of the panel.

3. The construct of claim **1**, wherein the emboss edge extends around a perimeter of the at least one emboss and the deboss edge extends around a perimeter of the at least one deboss.

4. The construct of claim **1**, wherein each of the edges is curved.

5. The construct of claim **1**, wherein the panel comprises a grain direction, and at least a majority of each of the edges is nonparallel with the grain direction.

6. The construct of claim **1**, wherein the pattern of bosses comprises a plurality of emboss features and a plurality of deboss features.

7. The construct of claim **6**, wherein the deboss features of the plurality of deboss features are interspersed with the emboss features of the plurality of emboss features.

8. The construct of claim **1**, wherein each of the bosses of the pattern of bosses comprises a curved segment.

9. The construct of claim **8**, wherein the curved segments are disposed in at least one elliptical arrangement in the panel.

10. The construct of claim **8**, wherein the curved segments are disposed in at least one semielliptical arrangement in the panel.

11. The construct of claim **8**, wherein the curved segments are disposed in at least one semielliptical arrangement adjacent and in at least one elliptical arrangement in the panel.

12. The construct of claim **1**, wherein each of the bosses of the pattern of bosses comprises a circle.

13. The construct of claim **12**, wherein the circles are arranged in at least a first row and a second row, the first row being generally offset from the second row.

14. The construct of claim **1**, wherein each of the bosses of the pattern of bosses comprises an elongate curve.

15. The construct of claim **14**, wherein each of the elongate curves comprises a radius of curvature, and the

elongate curves are arranged in the blank so that each elongate curve has a generally opposing radius of curvature relative to the radius of curvature of an adjacent one of the elongate curves.

16. The construct of claim **1**, wherein each of the bosses of the pattern of bosses comprises a generally longitudinal segment or a generally lateral segment.

17. The construct of claim **16**, wherein at least one of the generally longitudinal segments extends between respective ends of two of the generally lateral segments.

18. The construct of claim **1**, wherein each of the bosses of the pattern of bosses comprises a generally longitudinal segment, a generally lateral segment, or an oblique segment.

19. The construct of claim **18**, wherein each of the oblique segments extends from an end of one of the generally longitudinal segments to an end of one of the generally lateral segments.

20. The construct of claim **18**, wherein the generally longitudinal segments, the generally lateral segments, and the oblique segments are arranged in a plurality of generally concentric polygonal shapes.

21. The construct of claim **1**, wherein the construct is formed from a blank.

22. The construct of claim **1**, wherein the construct is a tray.

23. The construct of claim **1**, wherein the construct comprises at least one flap foldably connected to the panel.

24. The construct of claim **1**, wherein the construct comprises paperboard.

25. The construct of claim **1**, wherein the first planar surface of the panel surrounds the entire perimeter of the at least one emboss and the at least one deboss.

26. The construct of claim **1**, wherein the first planar surface abuts the emboss edge around the entire perimeter of the at least one emboss and the first planar surface abuts the deboss edge around the entire perimeter of the at least one deboss.

27. The construct of claim **1**, wherein the outer edge is one of a plurality of outer edges of the panel, the first planar surfaced extending to each of the plurality of outer edges of the panel.

28. A method of forming a construct, the method comprising:

obtaining a web of material comprising at least a panel; and

forming a plurality of stiffening features in the panel comprising forming a pattern of bosses in the panel for at least partially reducing buckling of the panel,

the pattern of bosses comprising:

at least one emboss and at least one deboss, wherein

the at least one emboss is spaced apart from the at least one deboss by a neutral area of the panel, the neutral area of the panel comprising a first planar surface extending between the at least one emboss and the at least one deboss and extending to an outer edge of the panel,

the at least one emboss is at least partially defined by an emboss edge,

the at least one deboss is at least partially defined by a deboss edge,

an entirety of the emboss edge abutting the neutral area and extending from the first planar surface to a second planar surface in a first direction, the emboss edge comprising an outer peripheral emboss edge portion, an inner peripheral emboss edge portion, a first curved radial emboss edge end, and a second curved radial emboss edge end, the first curved radial emboss edge end and the second curved radial emboss edge end each connecting the outer peripheral emboss edge portion and the inner peripheral emboss edge portion, and

an entirety of the deboss edge abutting the neutral area and extending from the first planar surface to a third planar surface in a second direction, the deboss edge comprising an outer peripheral deboss edge portion, an inner peripheral deboss edge portion, a first curved radial deboss edge end, and a second curved radial deboss edge end, the first curved radial deboss edge end and the second curved radial deboss edge end each connecting the outer peripheral deboss edge portion and the inner peripheral deboss edge portion, the second direction being opposite the first direction, and

the first planar surface extending between the first curved radial emboss edge and the first curved radial deboss edge.

29. The method of claim **28**, wherein the construct is a blank, and the method further comprises forming the blank into a tray for supporting at least one article.

30. The method of claim **29**, wherein the blank comprises at least one flap foldably connected to the panel, and the forming the blank into a tray comprises folding the at least one flap relative to the panel.

31. The method of claim **28**, wherein each emboss edge and each deboss extends generally perpendicular to the neutral area of the panel.

32. The method of claim **28**, wherein the forming the pattern of bosses comprises forming a plurality of emboss features and a plurality of deboss features so that the deboss features of the plurality of deboss features are interspersed with the emboss features of the plurality of emboss features.

33. The method of claim **28**, wherein each of the bosses of the pattern of bosses comprises a curved segment.

34. The method of claim **33**, wherein the forming the pattern of bosses comprises disposing the curved segments in at least one of a semielliptical arrangement and an elliptical arrangement in the panel.

35. The method of claim **28**, wherein each of the bosses of the pattern of bosses comprises a circle.

36. The method of claim **28**, wherein each of the bosses of the pattern of bosses comprises an elongate curve.

37. The method of claim **28**, wherein each of the bosses of the pattern of bosses comprises a generally longitudinal segment or a generally lateral segment.

38. The method of claim **28**, wherein the construct comprises paperboard.

39. The method of claim **28**, wherein the first planar surface of the panel surrounds the entire perimeter of the at least one emboss and the at least one deboss.

40. The method of claim **28**, wherein the first planar surface abuts the emboss edge around the entire perimeter of the at least one emboss and the first planar surface abuts the deboss edge around the entire perimeter of the at least one deboss.

41. The method of claim **28**, wherein the outer edge is one of a plurality of outer edges of the panel, the first planar surfaced extending to each of the plurality of outer edges of the panel.

42. A construct for supporting at least one article, the construct comprising:

at least a panel; and

a plurality of stiffening features comprising a pattern of bosses formed in the panel, the pattern of bosses being configured for at least partially reducing buckling of the panel,

the pattern of bosses comprising:

at least one emboss and at least one deboss, wherein

the at least one emboss is spaced apart from the at least one deboss by a neutral area of the panel, the neutral area of the panel comprising a first planar surface extending between the at least one emboss and the at least one deboss and extending to an outer edge of the panel,

the at least one emboss comprising an emboss edge extending around the at least one emboss and defining an emboss edge interior area, the emboss comprising an entirety of the emboss edge interior area, an entirety of an exterior of the emboss edge abutting the neutral area, and

the at least one deboss comprising a deboss edge extending around the deboss and defining a deboss edge interior area, the deboss comprising an entirety of the deboss edge interior area, an entirety of an exterior of the deboss edge abutting the neutral area,

the emboss edge extending from the first planar surface to a second planar surface in a first direction,

the deboss edge extending from the first planar surface to a third planar surface in a second direction, and

the second direction being opposite the first direction.

43. A method of forming a construct, the method comprising:

obtaining a web of material comprising at least a panel; and

forming a plurality of stiffening features in the panel comprising forming a pattern of bosses in the panel for at least partially reducing buckling of the panel,

the pattern of bosses comprising:

at least one emboss and at least one deboss, wherein

the at least one emboss is spaced apart from the at least one deboss by a neutral area of the panel, the neutral area of the panel comprising a first planar surface extending between the at least one emboss and the at least one deboss and extending to an outer edge of the panel,

the at least one emboss comprising an emboss edge extending around the emboss and defining an emboss edge interior area, the emboss comprising an entirety of the emboss edge interior area, and an entirety of an exterior of the emboss edge abutting the neutral area, and

the at least one deboss comprising a deboss edge extending around the deboss and defining a deboss edge interior area, the deboss comprising an entirety of the deboss edge interior area, and an entirety of an exterior of the deboss edge abutting the neutral area,

the emboss edge extending from the first planar surface to a second planar surface in a first direction,

the deboss edge extending from the first planar surface to a third planar surface in a second direction, and

the second direction being opposite the first direction.

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